

THE CLAIMS

What is claimed is:

1. A process for manufacturing a snack product comprising:
preparing a mixture comprising, in parts by weight, from 5.5 to 27.5 parts of non-fat milk solids, about 2.5 to 12.5 parts of milk fat or vegetable fat or combination thereof, about 50 to 80 parts of amylaceous material, up to 12 parts of sugar, and added water up to a water content of from 11 to 19% by weight of the mixture;
cooking the mixture at 120 to 170° C under 40 to 160 bar for 5 to 50s;
to obtain a thermoplastic mass having a porous texture;
injecting compressed nitrogen into the thermoplastic mass to decrease the size of the pores and cool the mass before extrusion; and
extruding the thermoplastic mass to obtain a snack product .
2. The process of claim 1, which further comprises cutting the extruded thermoplastic mass to provide pieces of the snack product.
3. The process of claim 1, in which the mixture comprises from about 11 to 27.5 parts of non-fat milk solids and about 5 to 12.5 parts of milk fat or vegetable fat or a combination thereof.
4. The process of claim 1 wherein the mixing step is carried out in a first mixing section of a traditional food extruder and cooking the mixture is carried out in a subsequent section of the extruder.
5. The process of claim 1 wherein the mixture is heated, compressed and sheared so that it forms a cooked thermoplastic mass.
6. The process of claim 1, in which the mixture further comprises adding to the mixture calcium to provide a total amount of calcium of up to 3 parts, additional vitamins, oligoelements, sodium chloride, or combinations thereof.

7. The process of claim 1 wherein the thermoplastic mass is extruded by having it pushed by the extruder screw or twin screw through the openings of a die provided for at an end of the extruder.
8. The process of claim 7, wherein the die openings have different shapes including a star, ring, half moon, flower, heart, square, loop or banana.
9. The process of claim 1 where the thermoplastic mass is expanded by extruding it through a die into an open space at ambient temperature and atmospheric pressure.
10. The process of claim 1, further comprising drying the pieces down to a residual water content of about 1 to 3%.
10. The process of claim 1 wherein the thermoplastic mass is cut into pieces by a two or more blade cutter rotating adjacent to the extrusion die openings.
11. The process of claim 1, wherein the nitrogen injection is carried out under a pressure of about 35 to 160 bar and a rate of about 0.1 to 0.6 g nitrogen per kilogram of mass.
12. The process of claim 1 further comprising spraying the snack product with a slurry having a composition that comprises in parts by weight, about 30 to 60 parts of sugar, up to 32 parts of whole milk powder, up to 60 parts of fruit pulp or concentrate, up to 10 parts of cocoa powder and added water up to a water content of about 20 to 30%.
13. A snack product having a fine porous texture prepared by the process of claim 1.
14. The snack product of claim 13 having a filled center which is carried out by coextrusion.
15. The snack product of claim 16 having a residual water content of about 1 to 3% and being in the shape of a star, ring, half moon, flower, heart, square, loop or banana.
16. An extruded, expanded snack product that has a fine, porous, crunchy, smooth, and melt-in-the-mouth texture prepared by extruding a mixture comprising, in parts by weight, from 5.5 to 27.5 parts of non-fat milk solids, about 2.5 to 12.5 parts of milk fat or vegetable

fat or combination thereof, about 50 to 80 parts of amylaceous material, up to 12 parts of sugar, added water up to a water content of from 11 to 19% by weight of the mixture, and nitrogen gas in an amount effective to decrease pore size.

17. The snack product of claim 16 having a filled center.

18. The snack product of claim 16 having a residual water content of about 1 to 3% and being in the shape of a star, ring, half moon, flower, heart, square, loop or banana.